

Remarks

In the present application claims 1-19, 22 and 47-56 are pending and presented for the Examiners review and consideration. Claims 23-28 are canceled herein without prejudice as explained below.

Corrected formal drawings are submitted for consideration and approval as required. In addition to correction of formalities such as clarity and line weight, reference numerals have been added consistently between figures. No new reference numerals are added to the application. Only existing reference numerals identifying existing features of the invention have been added to figures wherein the feature was originally shown but the reference numeral omitted. No new matter is added by these changes.

Claims 1, 13 and 15-17 were rejected under 35 USC 103(a) as being unpatentable over Osman et al. in view of Fare et al. Additionally, claims 23-28 were rejected as being unpatentable over Olesen et al and Kovacs et al., and claims 47-56 were rejected as being unpatentable over Kovacs et al. and Fare et al. Claims 1-19, 22, and 47-56 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was purportedly not described in the original specification. These rejections are respectfully traversed.

First, with respect to the Section 112 rejection, it is respectfully pointed out that the original specification did, in fact, include specific disclosure of the solution perfusion channel. The Examiner's attention is directed to original Figure 1B, wherein the reference numeral 7 is used to indicate the solution perfusion channel in the lower, right portion of the figure. While the original application did not repeat in each figure the reference numerals for the common features of the invention shown in each figure, given the clear identification of the solution perfusion channel 7 in FIG. 1B, a person skilled in the art would have understood that the claimed solution perfusion channel was described in the original specification. Moreover, substrate 4 is identified by the reference numeral 4 in FIG. 1A and this feature is also repeated in other figures without repeat of the reference numeral itself.

For these reasons a person of ordinary skill in the art, taking the application as a whole, would clearly have understood the description of the invention as filed to include both "a solution perfusion channel" and a "substrate disposed between the membrane and solution perfusion channel." The rejection under 35 U.S.C. 112, first paragraph, therefore

should be withdrawn. As a result, at least claims 2-12, 14, 18-19 and 22 are allowable because they are not subject to any other rejection. For this reason, claims 2 and 22 have been amended to be in independent form, adding all limitations from claim 1 from which they formerly depended. These amendments are appropriate for entry at this time because they add no new issues and place those claims, as independent claims, in better form for allowance.

The basis for the continued rejection of claims 1, 13 and 15-17 is not well understood. The deficiencies of the Osman et al. reference are discussed in detail in the prior response and have not been shown to have been overcome. Fare et al. contains a similar disclosure. However, the Examiner argues that Fare et al. “do disclose a ‘solution perfusion channel’ on the opposite side of the porous substrate from the biological membrane (fig. 4).” Applicants note that while the Examiner generally refers to Fig. 4 of Fare et al., nowhere in the office action is there any specific citation to the disclosure of Fare et al. identifying the precise structure that is alleged to be disclosed.

Applicants have reviewed the Fare et al. reference in detail and simply do not understand how it is that the Examiner asserts that FIG. 4 shows the claimed structure or anything close to it. Viewing a section through FIG. 4 of Fare et al., through the lipid bilayer, from bottom to top shows the following layers:

Bottom layer: (1) P-Substrate – p-Si (col. 5, ln. 68)

Next layer up: (2) N-Collector – n-Si (col. 5, ln. 68)

Next layer up: (3) P-Base – p-Si (col. 6, ln. 1)

Next layer up: Porous Substrate (col. 6, lns. 3-62)

Top layer: Lipid Bilayer containing receptors (col. 7, lns. 10-25).

(On the same layer surrounding the Lipid Bilayer is an
Insulating Layer.)

Above the top layer is the sample to be tested. (e.g. col. 7, ln. 26: “In use, the
device is placed in a reference
bath...”)

There simply is no channel/substrate/cell structure present in that order of elements. Nor is it suggested in any way.

In contrast, a cross section through an embodiment of the present invention as shown, for example, in FIGS. 1A and 1B has the following layers:

Bottom layer: (6) well wall

Next layer up: (5) electrode

Next layer up: (7) solution perfusion channel

Next layer up: (4) porous substrate

Next layer up: (2) permeablized cell surface and (1) cells

Effective top layer: (5) another electrode

Thus, while the present invention does have a substrate (4) disposed between the membrane (2) and a solution perfusion channel (7), no such structure is disclosed or suggested in Fare et al. nor any other prior art cited by the Examiner. For these reasons, it is respectfully submitted that the rejection of claims 1, 13 and 15-17 has been overcome. Should the Examiner continue to maintain that the claimed structure is shown in Fare et al., he is respectfully requested to provide a more detailed citation and/or description of that structure so that Applicants can respond with greater specificity.

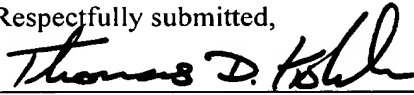
For at least the same reasons that claims 1, 13 and 15-17 are allowable, so are claims 47-56. Independent claim 47 recites, inter alia, "a porous substrate disposed in the well and spaced from the bottom to define a solution perfusion channel between the well bottom and substrate..." Independent claim 56 contains the same recitation and further, specifically adds the recitation of a voltage-clamp amplifier. As discussed above, this structure is not disclosed or suggested in any cited art. Moreover, given that references such as Fare, Osman, and Kovacs are biosensors and not screening devices of the type claimed, it would not have been obvious to add a voltage-clamp amplifier to such a structure because those structures could not be used for patch clamping. Thus claims 47 and 56, and the claims dependent on claim 47, are in allowable form.

Although Applicants also maintain that claims 23-28 define over the prior art, these claims have been canceled herein in an attempt to expedite the prosecution of the present application to allowance as a whole. Claims 23-28 are therefore canceled without prejudice to the Applicants' right to further pursue those claims in a related application.

In view of the foregoing amendments and remarks, the application as a whole is believed to be in form for allowance and its earliest possible allowance is earnestly solicited. The Examiner is invited to call the undersigned attorney at (415) 442-1106, if a telephone call could help resolve any remaining items.

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Respectfully submitted,



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